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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/619,591

07/16/2003

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TAIW 813

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EXAMINER

NADAV, ORI

ART UNIT

PAPER NUMBER

2811

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/619,591

Applicant(s)

WU ET AL.

Examiner

Ori Nadav

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period **will** apply and **will** expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply **will**, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 January 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 37-63 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 37-63 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 60 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no support in the specification for the claimed limitation of an inorganic substrate being fully covered by said two organic substrates, as recited in dependent claim 60, because the sides of the inorganic substrate are not covered by said two organic substrates.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 37-40, 42-45 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shaheen (5,030,499) in view Hashemi et al. (6,867,493).

Regarding claims 37-39 and 49-51, Shaheen teaches in figure 1 and related text a composite laminated substrate for integrated and minimized electronic circuits, comprising:

an inorganic ceramic substrate 18 having at least one passive component 14 embedded therein; and

an organic substrate 10 which is laminated to one side of the inorganic substrate and which has electrical connections 14 between outer input/output port and the at least one passive component of the inorganic substrate.

Shaheen does not teach an organic substrate having circuits for electrical connections between outer input/output ports and the at least one passive component of the inorganic substrate.

Hashemi et al. teach in figure 8 and related text an organic substrate 820 having circuits for electrical connections between outer input/output ports and at least one passive component.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use an organic substrate having circuits for electrical connections between outer input/output ports and the at least one passive component of the inorganic substrate in Shaheen's device in order to reduce the size of the device by using conventional organic substrate comprising circuits for electrical connections.

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Regarding claim 40, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use silicon substrate in prior art's device in order to form the device of conventional substrate material, of which official notice is taken.

Regarding claims 42-43, Hashemi et al. teach in figure 8 and related text an organic substrate is composed of a plurality of stacked printed circuit boards with each having its own respective separate circuitry. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use an organic substrate is composed of a plurality of stacked printed circuit board with each having its own respective separate circuitry in Shaheen's device in order to reduce the size of the device.

Regarding claims 44-45, Hashemi et al. teach in figure 8 and related text organic substrate has an outer surface layer which is a built-up surface layer, which includes a circuit, wherein the organic substrate further comprises at least one passive component.

Regarding claim 48, Shaheen teaches in figure 1 and related text a bonding layer 16 which is provided between the inorganic substrate and the organic substrate, and which bonds together the inorganic substrate and the organic substrate.

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Claims 41, 46 and 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shaheen and Hashemi et al., as applied to claims 37 and 45 above, and further in view Nishide et al. (5,827,605).

Shaheen and Hashemi et al. teach substantially the entire claimed structure, as applied to claims 37 and 45 above, except one passive component of the organic and inorganic substrate is selected from the group consisting of a capacitor, an inductor, a resistor, and any mixture thereof, wherein said at least one passive component is separated from, so as to not directly contact, the two organic substrates.

Nishide et al. teach in figure 1 and related text one passive component 4, 5, 8 selected from the group consisting of a capacitor, an inductor, a resistor, and any mixture thereof.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use one passive component of the organic and inorganic substrate is selected from the group consisting of a capacitor, an inductor, a resistor, and any mixture thereof, wherein said at least one passive component is separated from, so as to not directly contact, the two organic substrates, in prior art's device in order to reduce the size of the device by incorporating the passive components within the substrates.

Claims 47, 49-52, 54-57 and 59-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shaheen and Hashemi et al., as applied to claim 37 above, and further in view Berger et al. (6,528,145).

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Regarding claims 47, 49 and 59, Shaheen and Hashemi et al. teach substantially the entire claimed structure, as applied to claim 37 above, except having two organic substrates which are laminated to respective sides of the inorganic substrate

Berger et al. teach in figure 3 and related text two substrates, comprising print circuit boards (column 10, lines 32-45 and column 12, lines 44-46) integrated with the at least an inorganic substrate 20.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to laminate two organic substrates to respective sides of the inorganic substrate, in prior art's device in order to reduce the size of the device by providing more compact structure.

Note that prior art's device comprises circuits for electrical connections between outer input/output ports and the at least one passive component of the inorganic substrate through the two organic substrates.

Regarding claim 52, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use silicon substrate in prior art's device in order to form the device of conventional substrate material, of which official notice is taken.

Regarding claims 54-55, Hashemi et al. teach in figure 8 and related text an organic substrate is composed of a plurality of stacked printed circuit board with each having its own respective separate circuitry. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use an organic substrate is

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composed of a plurality of stacked printed circuit board with each having its own respective separate circuitry in Shaheen's device in order to reduce the size of the device.

Regarding claims 56-57, Hashemi et al. teach in figure 8 and related text organic substrate has an outer surface layer which is a built-up surface layer, which includes a circuit, wherein the organic substrate further comprises at least one passive component.

Regarding claim 60, prior art's device includes a covering layer which is provided on the inorganic substrate and covers the inorganic substrate, which integrates the inorganic substrate with one of the two organic substrates, and which comprises circuits for providing electrical connections between the at least one passive component of the inorganic substrate and said one of the two organic substrates, wherein the inorganic substrate is fully embedded in said one of the two organic substrates.

Regarding claim 61, Shaheen teaches in figure 1 and related text a bonding layer 16 which is provided between the inorganic substrate and the organic substrate, and which bonds together the inorganic substrate and the organic substrate.

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Claims 53, 58 and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shaheen, Hashemi et al. and Berger et al., as applied to claims 49 and 57 above, and further in view Nishide et al. (5,827,605).

Shaheen, Hashemi et al. and Berger et al. teach substantially the entire claimed structure, as applied to claims 49 and 57 above, except one passive component of the organic and inorganic substrate is selected from the group consisting of a capacitor, an inductor, a resistor, and any mixture thereof, wherein said at least one passive component is separated from, so as to not directly contact, the two organic substrates. Nishide et al. teach in figure 1 and related text one passive component 4, 5, 8 selected from the group consisting of a capacitor, an inductor, a resistor, and any mixture thereof.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use one passive component of the organic and inorganic substrate is selected from the group consisting of a capacitor, an inductor, a resistor, and any mixture thereof wherein said at least one passive component is separated from, so as to not directly contact, the two organic substrates, in prior art's device in order to reduce the size of the device by incorporating the passive components within the substrates.

Response to Arguments

Applicant argues that Shaheen does not teach an inorganic ceramic substrate having at least one passive component embedded therein, because element 14 is a conductive post and not a passive element which “is typically defined as a component of an electrical circuit that is not a source of energy, and includes, for example, capacitors, inductors, and/or resistors”.

The examiner agrees that a passive element is typically defined as a component of an electrical circuit that is not a source of energy, and includes, for example, capacitors, inductors, and/or resistors. Although applicant provided capacitors, inductors, and/or resistors as examples of passive components, clearly wirings, plugs and posts are not a source of energy, and thus are considered as passive components. Therefore, the conductive post of Shaheen is a passive component.

Applicant argues that conductive post 14 of Shaheen is not embedded in the inorganic ceramic substrate 18, because “the post 14 is disposed within a hole formed within the ceramic layer 18”.

Since the conductive post 14 of Shaheen is disposed within a hole filled with adhesive 16, and the adhesive (hole) is formed within the ceramic layer 18, it is unclear to the examiner why the conductive post 14 is not embedded (i.e. surrounded closely) in the inorganic ceramic substrate 18.

Applicant argues that Shaheen teaches away from a ceramic (inorganic) layer that has two organic substrates laminated on respective sides thereof, as recited by applicants' independent claim 49, because Shaheen specifically discloses that "all of the layers of the multi-layer substrate, other than the outer layer, are organic layers: the outer layer is the only ceramic layer.", which means that "this reference teaches that the outer layer is the only ceramic (inorganic) layer".

Shaheen teaches a structure comprising a ceramic (inorganic) layer and an organic substrate. Shaheen does not teach more than two layers in the embodiment of figure 1. Therefore, Shaheen does not teach away from Berger et al.'s teachings of two substrates comprising print circuit boards integrated with at least an inorganic substrate.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ori Nadav whose telephone number is 571-272-1660. The examiner can normally be reached between the hours of 7 AM to 4 PM (Eastern Standard Time) Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne Gurley can be reached on 571-272-4670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

O.N.
4/22/2008

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